Technical Report No. 88-1

The Bald Eagle in Manitoba

By Koonz, W.H. 1988

Manitoba
Natural Resources
Wildlife
Biological Services

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Abstract

Bald Eagles breed throughout Manitoba except in the Hudson Bay Lowlands and in southern agricultural areas. Nests are 3-20 meters off the ground in deciduous and coniferous trees. Nests are usually on islands, with active nests seldom less than a kilometer apart. Most are in sight of water, particularly fast water in the north. Nests may be used for 20 or more successive years. Breeding densities vary according to human disturbance, water turbidity and availability of food and nest sites. Eagles arrive at nest sites by early April and are incubating by month's end. Young fledge at 10-12 weeks of age, from the middle of July to mid-August. Fall migration begins when major lakes begin to freeze over in October; however, individuals may attempt to overwinter in the province near food sources such as piles of discarded fish or where animal carcasses have been left by a trapper. Manitoba eagles are opportunistic but feed primarily on fish during the breeding season. They may rely on other food scurces in migration or in special circumstances. Both sexes attain adult plumage and sexual maturity at 4-5 years of age. Forested and semi-agricultural areas of Manitoba were systematically surveyed for nesting eagles each summer from 1982 to 1987. It is estimated that over 1300 pairs of Bald Eagles nest in Manitoba annually. A fall estimate of 8000 individuals for the province is considered conservative.

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Surveys conducted in 1982 and 1983 were coordinated by D.R.M. Hatch, assisted by J.M. Gerrard, M.D., and others. Thanks also goes to the Massachusetts film crew, Christopher G. Knight and Jack Swedberg, Boston, for their coverage of the 1983 capture and release. Film footage from that effort near Bissett, Manitoba was incorporated into the movie "Home Free."

There were many who contributed as pilots and observers, but special thanks go to pilots Dale Penner, Eddy Caul, Ike Enns, Ken Wark and Wade Pearson for their expertise over many hours, enabling us to find and document eagle nests as well as to land, capture and transport young birds. Observers Brian Ratcliff, Brenda Farmer, Ted Grewe and Mike Conrad spent many hours recording nests, often under difficult conditions.

Provincial staff who assisted by picking up equipment and eagles or by being available when needed are greatly appreciated. Of special mention in this group are Douglas R. Storey, Robert W. Nero and Merlin W. Shoesmith. I also thank Ken De Smet for his comments on drafts of this document.

This project has been international in scope and province-wide in application. Many regional staff contributed to its outcome. A special appreciation goes to Richard Labossier, Barney Clark, Danny Sewchuck, Ken Squark and all the Natural Resources staff in Winnipegosis for their cooperation, assistance and support as well as for allowing us to use their facilities for several years of eagle captures. The support given us by Mitch Walker and staff in Bissett during 1983 was pivotal in the continuation of this project. The personal interest, support and hospitality provided by Ian Ripley and his staff in Lynn Lake was an expression of the enthusiasm in that office and gave the project a real boost.

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THE BALD EAGLE IN MANITOBA

INTRODUCTION

The Bald Eagle breeds throughout North America from northern Mexico to the treeline in northern Canada and Alaska. It occurs at some time during the year in every state but Hawaii (Brownell and Oldham 1983). Like other raptors it was not given protection under the Migratory Birds Convention Act of 1916. In the past, several states including Alaska have encouraged the killing of eagles. Alaska paid bounties on more than 100,000 Bald Eagles between 1917 and 1952. Bald Eagle declines in the United States were recognized in the 1950-1980 period, especially east of the Mississippi River. In 1978 the Bald Eagle was listed as endangered in all but five of the lower 48 states. It was given threatened status in Michigan, Minnesota, Oregon, Washington, and Wisconsin. Alaska (25,000 breeding pairs) is the only state with a resident Bald Eagle population that does not give the species special protection (Alaska Region, Wildlife and Fisheries, National Forest Resources 1987). Although pesticides and habitat losses have been blamed for Bald Eagle declines (especially in the eastern half of the continent), shooting continues to be the main cause of death, particularly among immatures (Brownell and Oldham 1983).

In Canada the Bald Eagle occurs in every province and territory. It was persecuted for many decades as a threat to livestock and fish populations. Alberta offered a bounty for Bald Eagles during the 1940's; in British Columbia eagles are still considered by some as a threat to salmon populations. Ontario was the first province to officially recognize Bald Eagle declines by affording it protection under the Provincial Endangered Species Act in 1973. New Brunswick gave similar protection in 1976. Eastern Canadian Bald Eagles have declined to the point where Prince Edward Island contains only one nest and populations in southern Ontario, Quebec, New Brunswick and Nova Scotia occupy only portions of their former range. Breeding populations in Newfoundland are still considered to be extensive (Brownell and Oldham 1983).

Prior to this study little information had been compiled on the Bald Eagle in Manitoba except for special studies such as those on the Churchill River (Koonz and Storey 1975), a study by Grier (1977) that extended into the province near Gods Lake, some west-central surveys (Whitfield, et al. 1974) and

records kept by Riding Mountain National Park staff (warden file summary sheets of rare and endangered species).

This report incorporates data from Bald Eagle nest surveys conducted and supported by the Manitoba Department of Natural Resources from 1982-1987. The goal since 1983 was to determine the Bald Eagle's range, abundance and nesting success. Appendix I contains the results of 1982 and 1983 when D.R.M. Hatch coordinated the surveys. Appendix II contains the results of surveys conducted by W.H. Koonz 1984-1987. Initial financial support was provided by the Canadian Wildlife Service ($1,000) in 1982. From 1983-1986 annual survey flights were largely paid for by the United States Fish and Wildlife Service which received funds from New Jersey and Massachusetts in 1983 and from New Jersey thereafter. A three-year agreement was signed between the United States and Manitoba for the 1984-1986 period ($10,000 per year). Due to administrative difficulties, funds acquired from outside the Province (the three-year agreement) were dispersed through the University of Manitoba. In 1987, direct payments ($12,000) were made to the air carriers by the state of New Jersey.

In exchange for survey funding, Manitoba has agreed to send up to 10 young eagles to the United States annually as part of the program to replenish the northeastern United States with breeding Bald Eagles. One eaglet is taken from Manitoba nests containing two or more 6-9-week-old chicks. These eaglets are banded, placed in carrying cages and airlifted to a holding area while others are collected. While being held the young birds are largely kept from human sight and fed pieces of as much fresh fish as they will consume. Collection of the 8-10 young eagles takes about three days. Once the collection is complete, the birds are loaded into a covered truck and quickly transported to Winnipeg where customs checks and veterinary inspections take place prior to the flight to New Jersey. Upon arrival in New Jersey, the birds are taken directly to hacking towers where they stay until their release some 3-10 weeks later. The hacking towers are constructed in areas considered suitable for Bald Eagle nesting. To avoid human imprinting the towers are made so that the birds can be observed but cannot see humans at close range. Food is supplied to the two and sometimes three eaglets per tower through special doors so the birds cannot associate humans with food. The pen walls are removed the night prior to release. The birds are carefully monitored after release so that those experiencing problems during their first flights can be

rescued. To assist in monitoring, some birds are fitted with radios, others receive various types of wing markers. Food is put out in the hack tower area in hopes that the released birds will remain nearby and eventually nest in the area. Survival has been excellent and New Jersey resource staff eagerly await breeding attempts by released birds that will reach maturity in 1988 or 1989.

In the past few years several young Manitoba eagles have been confiscated by Natural Resource Officers from people illegally attempting to raise them as pets or from people who "rescued" them. Several of these young eagles were sent to the states. Forty-nine Manitoba Bald Eagles have been sent to the northeastern United States since 1983 (6 in 1983; 10 in 1984; 11 in 1985; 10 in 1986; 12 in 1987). Of these, 13 were acquired from outside the program, ie. confiscation by Natural Resource Officers (2 in 1983; 4 in 1984; 3 in 1985; 2 in 1986; 2 in 1987). Young Bald Eagles require specific diets and seldom receive proper care when humans attempt to raise them (calcium is extremely important for the growth of young eagles). Even if given proper food they tend to become habituated to humans, rendering them unreleaseable due to the threat to human safety.

METHODS AND MATERIALS

All aerial surveys employed private air carriers using fixed-wing, single-engined aircraft ranging in size from Cessna 180's to 206's. Nest surveys typically involved two observers, one on either side of the aircraft, flying some 100-200 meters off shore at 50-75 meters above the water. Lower altitudes or passes closer to the shoreline cause observer fatigue, while higher altitudes and/or greater distances from shore reduce nest spotting success (Grier et al. 1981). A second pass was frequently made when one or more adults were observed in prime habitat. Survey flights were seldom more than 3 hours in length, commencing an hour or so after sunrise. If weather conditions were suitable, late afternoon flights were also attempted. Surveys were not initiated when winds exceeded 25 kilometers per hour due to turbulence, especially along the forest/water interface (known nests were often not located when searches were attempted in windy conditions). The author took part as an observer and navigator in all survey flights 1984-1987. May and June survey routes were pre-planned and observation data were carefully plotted onto 1-250,000 topographic field maps. Data from field maps were transcribed onto duplicate sets of topographic maps with location data taken off the

original field maps. The topographic maps containing flight lines and data information are in the Wildlife Branch files. Appendix I contains a list of Bald Eagle nest locations recorded during survey flights in 1982-1983. The survey results from 1984-1987 are contained in Appendix II. Due to logistic and nest status difficulties this list does not include nests seen from the ground or reported by other observers. The use of different observers prevented the inclusion of new nests seen while doing productivity checks or while searching for nests from which to take young (exact locations of these new nests were seldom recorded).

Surveys concentrated on the best looking habitats within the areas flown and were by no means complete. The 1982-1983 surveys were primarily along and east of the shores of the southern half of Lake Winnipeg as well as along the shores of Lake Manitoba. They began in Whiteshell Provincial Park in 1984 and included much of the land between Lake Winnipeg and the Ontario border north to the Poplar River. They also included Hecla Island Provincial Park and much of the shoreline of Lakes Manitoba and Winnipegosis. The 1985 survey included much of the area between The Pas and the Churchill River to as far east as Thompson. In 1986 the Gods Lake area, including Island Lake, Stevenson Lake, Molson Lake, Oxford Lake, Bear Lake, Knee Lake, Red Sucker Lake and sections of the Hayes and Gods rivers, was flown. The 1987 survey included the northwest corner of the province from the Churchill River north to the Northwest Territories and from the Saskatchewan border to South Indian Lake and north to Nueltin Lake.

RESULTS AND DISCUSSION

Range in Manitoba

Bald Eagles breed north of a line from the southeast corner of the province, northwest to the south end of Lake Winnipeg, west through Lake Manitoba and the south end of Riding Mountain National Park to Saskatchewan. Nest densities are low in agro-Manitoba except where lakes or rivers provide islands of undisturbed breeding habitat. In the north eagles are found to the Northwest Territories on the west but do not appear to breed east of Nueltin Lake or within 150 kilometers of the Hudson Bay coastline except in isolated locations along the major river systems (Figure 1). Eagles observed during surveys fell into three approximately equal groups; breeding adults, non-breeding adults and immatures. An estimate of the breeding pairs of Bald

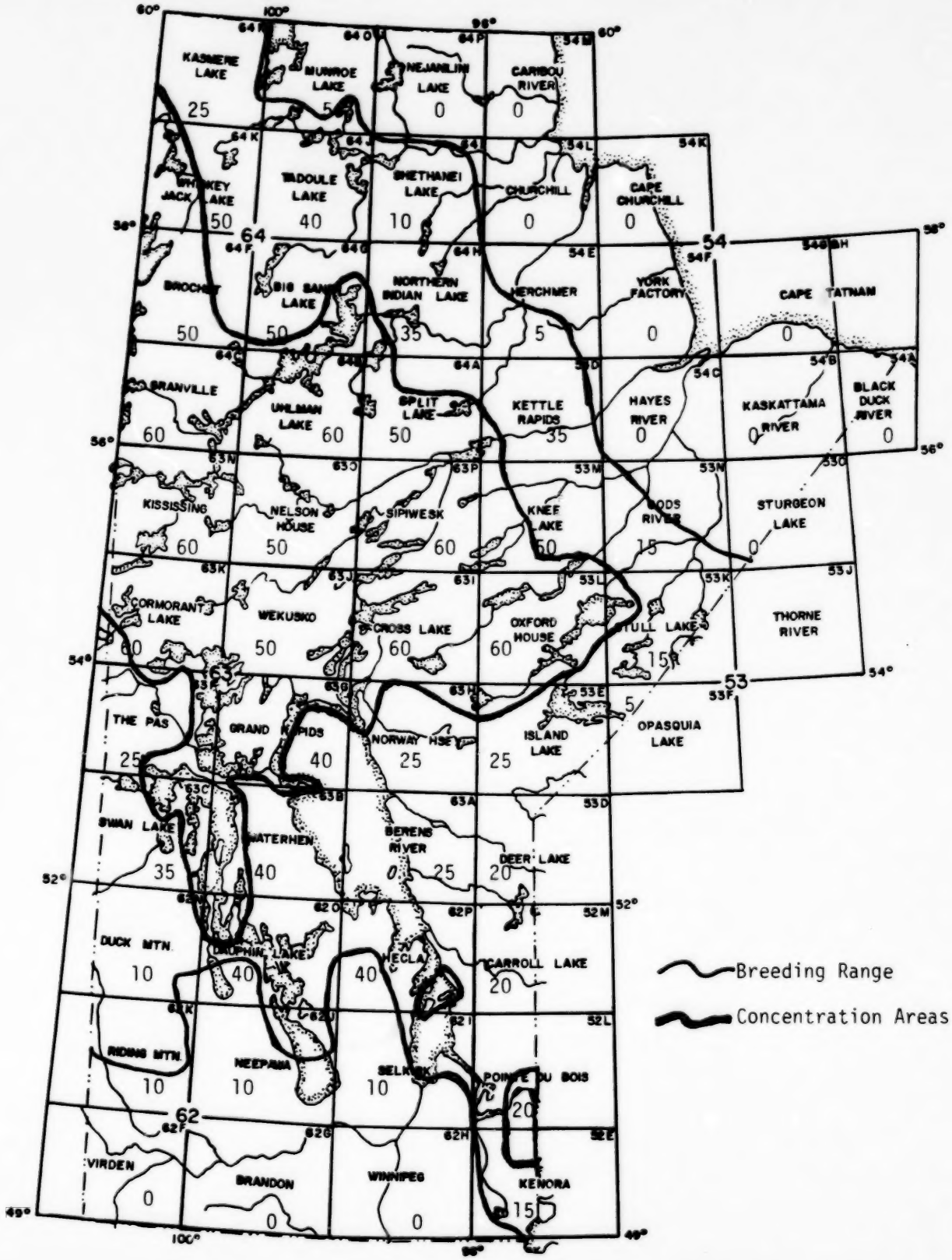
Eagles in Manitoba was made for each 1-250,000 map sheet. It was based on the 452 active nests and 300 inactive nests recorded during aerial surveys (Figure 1). Consideration that a percentage of active nests went unrecorded and considerable breeding habitat was inadequately surveyed was included in the estimate. The total breeding pair estimate for the Province of Manitoba is 1385. Including breeders (2700), non-breeders (2700), immatures (2500) and young of the year (1100); a fall estimate of 8000 individuals is probably conservative.

Nest Site and Tree Selection

Bald Eagles in Manitoba nest in deciduous and coniferous trees 3-20 meters above the ground. A view of water from the nest platform appears essential, limiting nest locations to islands and shoreline areas. Over 50 percent of the nests recorded were on islands. Island sites are particularly desirable in the north because they provide protection from fires and areas surrounded by water are subjected to less drastic temperature and humidity changes than are mainland areas during the ice-free season. Island trees are generally larger than those on the mainland. Nests in the south are often found around large lakes; those farther north are usually near fast water. Turbid water, such as is found in the Hayes and Gods rivers from Shamattawa north and in the Hudson Bay Lowlands appear to be avoided. Nest trees in the south are often deciduous with conifers more often chosen northward.

Nearly 50% of the 597 Bald Eagle nest trees identified were deciduous. Trembling aspen (Populus tremuloides) and balsam poplar (Populus balsamifera) were not separated as to species. Together they accounted for 274 of the 290 deciduous nest trees recorded. Trembling aspen was by far the most commonly chosen deciduous tree. Paper birch (Betula papyrifera) 12, and American elm (Ulmus americana) 4, were the only other deciduous species identified as nest trees during the Bald Eagle breeding survey flights. A Bald Eagle nest along the Ontario border on an island in the Winnipeg River and a nest along the Lake Manitoba shoreline southeast of Winnipegosis, represent the only bur oak (Quercus macrocarpa) nest trees recorded. These nests were found while doing productivity analysis and are not included in the appendix. Over 50% (307 of 597) of the recorded nests occurred in conifers, of which white spruce (Picea glauca) and black spruce (Picea mariana) comprised the greatest majority (274 of 307). These tree species were not separated but white spruce

Figure 1. Manitoba's Bald Eagle Breeding Range and Active Nest Estimates per 1:250,000 Map Sheet



was assumed to be most commonly used. Jack Pine (Pinus banksiana) was recorded as the nest tree in about 10% of the conifers chosen. One nest in extreme southeastern Manitoba was located in a white pine (Pinus strobus). Sixty-three percent of the mainland nest trees were deciduous, whereas, only 35 percent of the island nests were in deciduous trees. Eighteen percent of the nest trees were recorded as being dead.

There is considerable variation in how long eagles will nest in the same tree. Deciduous trees are typically dead or dying when occupied and are used for only a few years. Nests in live conifers, especially white spruce, may be used for over 20 years. Active nests are usually more than a kilometer apart as breeding eagles are intolerant of other eagles within one half kilometer of their nest. Some pairs construct more than one nest in their territory. These nests are generally close to each other, often in nearby trees on the same island or shoreline.

The need for suitable nest sites, accessible to food supplies and limited disturbance at critical times during the breeding season, contributes to the inconsistency of Bald Eagle nesting densities throughout their Manitoba range. Whiteshell Provincial Park, for example, contained about 20 active nests, yet few nests were located between Lake Winnipeg and the Ontario border from the Whiteshell north to Island Lake. Reed Lake, in Grass River Provincial Park, contained eight or more active nests despite considerable human activity and an active mine nearby. Habitats east and west of Gods Lake contained high eagle densities, whereas Island Lake to the south and the Gods River downstream from Gods Lake supported few breeding pairs. In the north, eagles usually nest close to fast water, a factor that greatly restricts their numbers in many areas.

Productivity

Although these surveys did not attempt to quantify productivity, observations indicate that considerable variation occurred during the study years. In 1983, productivity was considered poor; in 1984 there were 1.7 chicks per successful nest for the roughly 50 nests monitored. In 1985 and 1986 many nests failed, about one third, and there were 1.3 chicks per successful nest for the 60 to 70 nests monitored for productivity. The 1987 breeding season appeared to be excellent, nest success was high and numbers of young per successful nests were near 2.0 for a limited number of nests (20)

monitored in the Lake Winnipegosis area. Personal contact with people monitoring eagles in northwestern Ontario and Saskatchewan indicated that those provinces experienced similar trends in nest productivity with 1987 being exceptional.

Since the nest surveys frequently occurred during the incubation period, nest failure rates were difficult to determine. Even at those early dates, roughly 35% of the nests observed were inactive, indicating that territorial pairs either did not initiate nests or that a large percentage of nests failed prior to hatching. Now that the goals of determining breeding numbers and distribution have been met, future studies will put more emphasis upon nest productivity and failure rates.

Human Tolerances

Bald Eagles vary considerably in their reaction to humans. These variations relate to individual differences, time of day, weather conditions, mode of human travel and the nesting stage when the disturbance occurs (McGarigal et al. 1987). Some established pairs adjust to and tolerate considerable human disturbance, but other pairs do not. In the Lake of the Woods area, some active eagle nests are located over cottage roofs (personal observation). An island in Falcon Lake has supported an active nest for many years despite nearby float planes, power boats, vehicles and human concentrations. On the other hand, although rivers and lakes east of Lake Winnipeg appear suitable, few active eagle nests were found there. Bald Eagles flush more readily when approached on foot than when approached by an aircraft, boat or vehicle (Fraser 1983). When approaching nests from the air, the adults typically sit tight, if on eggs, until the aircraft is nearly on top of the nest. When the young are several weeks old, the adults usually stay in the nest vacinity until the aircraft approaches to within 1/2 kilometer. Much variation exists, however, an adult left a Burntwood Lake nest with eggs when the aircraft was nearly a kilometer away. A Claw Lake nest with a single 6-7 week old young contained an adult that would not leave even after three close passes by the aircraft. When active nests are approached by humans, the adults generally fly around calling for some time before retreating to a distant perch.

Food Habits

Bald Eagles feed primarily on fish during the breeding season, supplementing their diet with waterfowl and carrion during migration. They are opportunistic, however, and will utilize alternate food sources. In some circumstances, such as on Lake Winnipegosis near colonial waterbird breeding islands, they will bring other food items such as young gulls, terns, pelicans and cormorants to their nests. Fish-stringers and fish-line found in nests in the Whiteshell Provincial Park and Reed Lake indicate that eagles will scavenge food near human activity. Bald Eagles generally fish by flying low over the water and dropping their feet below the surface to grasp fish. This hunting technique limits their food to species found in rapids or near the surface and inhibits obtaining food in turbid waters. For this reason, turbidity caused by high water levels, beaver activity or recent fires is not conducive to eagle productivity. In some circumstances, especially in the fall or early in the spring, large numbers of eagles congregate around a locally abundant food source such as fish remains dumped on islands, dead animals left by trappers and moose or deer carcasses.

Migration and Maturation

Bald Eagles often return to Manitoba in mid to late March. By early April, some pairs, especially in the southeast, are incubating, but most delay egg-laying until mid-April. This delay is more evident northward. Clutches are generally complete more than a month prior to spring break-up. Since nest initiation occurs prior to ice break-up the condition of adults upon arrival from the south is considered important. Bald Eagle productivity may be as closely related to food availability during the previous winter as it is to conditions on the breeding grounds. This hypothesis requires more study but may help explain why annual productivity is consistent across Saskatchewan, Manitoba, and Northern Ontario. After some 35 days of incubation (Godfrey 1986) the eggs hatch and young are in the nests by early May in the south and the end of May in the north. This coincides with the timing of the major fish spawning runs. Young eagles fledge at 10-12 weeks of age; in mid-July in the south and during August in the north. Adults and young of the year generally remain near their nest sites until migration commences some time in October. Immature eagles usually leave with the first fall migration and return later

than adults in spring. The congregate near good fishing areas some distance from active nest sites.

During the breeding season Bald Eagles are normally secretive and are seldom seen in large numbers. They become sexually mature at about 4-5 years of age when both sexes attain the characteristic white head and tail. Females are slightly larger than males and sexes can be determined from foot pad measurements (Bortolotti 1983).

Conservation Measures

Bald Eagles are adapting to the presence of humans in many parts of their range. Humans are adapting to accept, appreciate and protect eagles. Continued co-existence will require that nesting locations and food sources are undisturbed by humans. Education, toxic chemical controls and legislation will also be necessary to insure the continued survival of breeding Bald Eagles in developing areas of the province.

The practice of leaving a 200 meter wide strip of mature timber around lakes and along rivers when cutting in an area is extremely important for monitoring Bald Eagle nesting sites. It asures the continued existence of nest trees and it reduces erosion and water turbidity, allowing the birds to see and capture their prey more easily.

To enhance the possibility of continued nesting success on a particular lake or river by breeding Bald Eagles, a restricted zone is required during the breeding season (April-May) around each active nest. This "no human use zone" should be a circle of 500 meter radius with the nest as its center. In addition a "disturbance free" feeding area is essential for Bald Eagle nesting success. A study by (McGarigal et al. 1987) analyzed human disturbance by fishermen in Bald Eagle feeding areas. A distance of 500 meters between eagles and fishermen was considered minimal. Some sensitive eagle pairs would not feed within 1000 meters of fishing boats.

In areas where lake and river systems are used for canoe and boat routes, a human, Bald Eagle conflict typically arises because eagles feed near rapids areas and nest nearby. Humans typically fish in these areas and camp nearby. Human activity, especially camping, should be discouraged near major Bald Eagle feeding and nesting areas (including islands), along canoe and boat routes. This may be accomplished by restricting human activity to one side of the river.

Small but significant numbers of eagles continue to be shot and trapped annually. The tradition of killing raptors on sight is declining as evidenced by the fact that shooting deaths declined from over half the birds turned in during the 1950's and 1960's to less than 20% of those turned in the 1970's (Brownell and Oldham, 1983). Shooting deaths are declining but the trend can be hastened through education and legal action. The use of open baits by trappers should be banned and offenders severely prosecuted.

Toxic chemical pollution has been and continues to be a threat to Bald Eagle populations. Chemical discharge rates and toxicity recordings require constant monitoring. Highly toxic chemicals must be legislated out of existence and pollution control testing and toxicity tests made more stringent before new chemicals are approved for public use.

Bald Eagles are adapting to human encroachment, humans must insure that the environment is suitable for eagles to co-exist in.

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APPENDIX I. 1982 Active Bald Eagle Nests (From Hatch, Unpublished Report)

Location	Nest Tree	Island or Mainland
52°09'N 97°01'W	Spruce	Mainland
51°19'N 96°40'W	Spruce	Mainland
51°17'N 96°35'W	Aspen	Mainland
51°16'N 96°35'W	Spruce	Mainland
51°11'N 96°41'W	Aspen	Mainland
51°10'N 96°42'W	Spruce	Mainland
51°13'N 96°30'W	Aspen	Mainland
51°06'N 96°24'W	Aspen	Mainland
51°00'N 96°22'W	Spruce	Mainland
50°56'N 96°22'W	Spruce	Mainland
50°53'N 96°21'W	Aspen	Mainland
50°52'N 96°21'W	Spruce	Mainland
50°36'N 96°17'W	Aspen	Mainland
50°25'N 95°47'W	Spruce	Mainland
50°24'N 95°31'W	Jack Pine	Mainland
50°32'N 95°16'W	Aspen	Mainland
50°35'N 95°18'W	Aspen	Mainland
50°41'N 95°17'W	Jack Pine	Island
50°42'N 95°17'W	Spruce	Island
50°44'N 95°19'W	Spruce	Mainland
50°45'N 95°21'W	Jack Pine	Island
50°45'N 95°12'W	Spruce	Mainland
50°46'N 95°13'W	Spruce	Island
50°48'N 95°13'W	Aspen	Mainland
50°48'N 95°12'W	Jack Pine	Mainland
50°52'N 95°23'W	Jack Pine	Mainland
50°55'N 95°38'W	Aspen	Mainland
50°47'N 95°43'W	Aspen	Mainland
51°07'N 96°01'W	Aspen	Mainland
51°09'N 96°12'W	Aspen	Mainland
51°16'N 96°18'W	Spruce	Mainland
51°02'N 95°23'W	Aspen	Mainland
51°12'N 95°19'W	Jack Pine	Mainland
51°12'N 95°23'W	Jack Pine	Island
51°19'N 95°32'W	Jack Pine	Mainland
51°23'N 95°35'W	Aspen	Island
51°25'N 95°52'W	Aspen	Mainland
51°35'N 95°42'W	Spruce	Island
51°41'N 95°34'W	Aspen	Mainland
52°01'N 95°31'W	Aspen	Mainland
51°50'N 95°26'W	Spruce	Island
51°52'N 95°42'W	Jack Pine	Mainland
51°54'N 95°49'W	Aspen	Island
51°53'N 95°57'W	Jack Pine	Island
51°46'N 96°54'W	Aspen	Mainland
51°41'N 96°59'W	Aspen	Mainland
51°40'N 97°06'N	Aspen	Mainland
51°28'N 97°11'W	Aspen	Mainland
51°37'N 97°14'W	Aspen	Mainland
51°45'N 97°16'W	Aspen	Mainland
52°02'N 97°29'W	Spruce	Mainland
52°03'N 97°44'W	Aspen	Mainland
51°56'N 97°49'W	Aspen	Mainland
52°07'N 98°07'W	Aspen	Mainland

Appendix I. Continued

Location	Nest Tree	Island or Mainland
52°12'N 97°03'W	Spruce	Mainland
52°13'N 96°59'W	Aspen	Mainland
52°19'N 97°04'W	Spruce	Mainland
52°18'N 96°53'W	Aspen	Mainland
52°16'N 96°41'W	Jack Pine	Mainland
1983 Active Bald Eagle Nests (From Hatch, Unpublished Report)		
51°09'N 98°44'W	Aspen	Mainland
51°16'N 98°49'W	Aspen	Mainland
51°18'N 99°02'W	Aspen	Mainland
51°20'N 99°04'W	Aspen	Mainland
51°34'N 99°22'W	Aspen	Island
51°38'N 99°24'W	Aspen	Mainland
51°35'N 99°32'W	Aspen	Island
51°43'N 99°28'W	Aspen	Island
51°47'N 99°29'W	Aspen	Mainland
51°46'N 99°20'W	Aspen	Mainland
51°37'N 99°14'W	Aspen	Island
51°37'N 99°08'W	Aspen	Mainland
51°39'N 99°08'W	Aspen	Mainland
51°41'N 99°08'W	Aspen	Mainland
51°44'N 99°11'W	Aspen	Mainland
51°40'N 99°04'W	Aspen	Mainland
51°26'N 98°58'W	Aspen	Mainland
51°22'N 98°56'W	Aspen	Mainland
51°28'N 98°54'W	Aspen	Mainland
51°39'N 98°55'W	Aspen	Island
51°51'N 96°44'W	Aspen	Mainland
51°42'N 96°43'W	Aspen	Mainland
51°31'N 96°34'W	Aspen	Mainland
51°29'N 96°33'W	Spruce	Mainland
51°22'N 96°26'W	Spruce	Mainland
51°20'N 96°22'W	Aspen	Mainland
51°03'N 96°24'W	Spruce	Mainland
50°41'N 96°22'W	Aspen	Mainland
50°42'N 96°22'W	Aspen	Mainland
50°25'N 95°59'W	Aspen	Mainland
50°54'N 95°37'W	Spruce	Mainland
51°05'N 95°12'W	Jack Pine	Island
51°32'N 95°14'W	Aspen	Mainland
51°43'N 95°15'W	Aspen	Island
51°45'N 95°14'W	Jack Pine	Island
51°51'N 95°13'W	Spruce	Mainland
52°07'N 95°19'W	Aspen	Mainland
51°50'N 95°32'W	Jack Pine	Island
52°09'N 96°01'W	Spruce	Island
51°59'N 98°16'W	Aspen	Mainland
52°14'N 97°02'W	Aspen	Mainland
51°15'N 96°20'W	Aspen	Island
51°19'N 95°16'W	Jack Pine	Mainland

Appendix I. Continued

Location	Nest Tree	Island or Mainland
52°02'N 95°20'W	Spruce	Island
52°06'N 95°38'W	Spruce	Island
52°11'N 95°50'W	Spruce	Island
52°52'N 97°22'W	Aspen	Mainland
52°45'N 97°16'W	Aspen	Mainland
52°39'N 96°15'W	Jack Pine	Island
52°37'N 96°19'W	Aspen	Mainland
52°32'N 96°08'W	Jack Pine	Island
52°34'N 95°43'W	Jack Pine	Island
52°32'N 95°25'W	Spruce	Island
52°29'N 95°24'W	Spruce	Island
52°24'N 95°28'W	Jack Pine	Mainland
52°24'N 95°16'W	Aspen	Island
52°01'N 96°23'W	Spruce	Island

APPENDIX II. 1984-1987 Bald Eagle Nest Locations From Aerial Surveys.

Location	Nest Tree	Live or Dead	Island or Mainland
49°13'N 95°18'W	Aspen	D	Mainland
49°37'N 95°09'W	Spruce	L	Island
49°42'N 95°12'W	White Pine	L	Island
49°46'N 95°10'W	Spruce	L	Mainland
49°54'N 95°35'W	Aspen	D	Mainland
49°57'N 95°23'W	Jack Pine	L	Mainland
49°47'N 95°25'W	Aspen	D	Mainland
50°02'N 95°29'W	Aspen	D	Mainland
50°04'N 95°17'W	Aspen	L	Mainland
50°08'N 95°34'W	Aspen	D	Mainland
50°09'N 95°15'W	Spruce	L	Mainland
50°09'N 95°17'W	Aspen	D	Mainland
50°13'N 95°29'W	Aspen	D	Mainland
50°15'N 95°11'W	Aspen	L	Mainland
50°15'N 95°15'W	Aspen	D	Island
50°18'N 95°15'W	Jack Pine	D	Mainland
50°22'N 95°14'W	Aspen	D	Mainland
50°22'N 95°28'W	Aspen	D	Island
50°23'N 95°21'W	Aspen	L	Mainland
50°40'N 95°29'W	Aspen	D	Mainland
50°47'N 96°28'W	Spruce	L	Mainland
50°53'N 96°28'W	Aspen	D	Mainland
50°57'N 95°43'W	Aspen	D	Mainland
51°03'N 96°44'W	Aspen	L	Mainland
51°05'N 95°10'W	Aspen	L	Mainland
51°05'N 96°26'W	Jack Pine	L	Mainland
51°08'N 96°45'W	Aspen	L	Mainland
51°10'N 95°14'W	Aspen	D	Mainland
51°10'N 96°32'W	Spruce	L	Mainland
51°15'N 96°25'W	Aspen	L	Mainland
51°18'N 95°16'W	Aspen	L	Island
51°19'N 96°22'W	Spruce	L	Island
51°36'N 95°36'W	Spruce	L	Island
51°40'N 95°34'W	Jack Pine	D	Island
51°43'N 95°15'W	Spruce	D	Mainland
51°44'N 95°32'W	Spruce	L	Island
51°49'N 95°29'W	Jack Pine	L	Island
51°50'N 95°26'W	Spruce	D	Island
51°50'N 96°45'W	Aspin	D	Mainland
51°51'N 95°13'W	Birch	D	Island
51°51'N 95°40'W	Jack Pine	D	Mainland
51°53'N 95°47'W	Spruce	D	Island
52°01'N 95°11'W	Spruce	L	Island
52°01'N 96°23'W	Jack Pine	L	Island
52°10'N 96°02'W	Spruce	L	Island
52°31'N 95°24'W	Birch	D	Island
52°33'N 95°45'W	Spruce	L	Mainland
52°46'N 97°21'W	Aspen	L	Mainland
52°57'N 97°56'W	Aspen	L	Island
53°44'N 97°51'W	Aspen	L	Island

Appendix II. Continued.

Location	Nest Tree	Live or Dead	Island or Mainland
51°06'N 98°49'W	Aspen	L	Mainland
51°09'N 98°45'W	Aspen	D	Mainland
51°22'N 98°56'W	Elm	L	Mainland
51°37'N 99°23'W	Aspen	L	Mainland
51°41'N 99°09'W	Aspen	D	Mainland
51°50'N 99°49'W	Elm	L	Island
51°50'N 100°04'W	Aspen	D	Island
51°54'N 99°49'W	Aspen	L	Mainland
51°56'N 100°08'W	Aspen	L	Mainland
52°02'N 99°58'W	Aspen	L	Mainland
52°04'N 100°08'W	Aspen	L	Mainland
52°21'N 100°08'W	Aspen	L	Mainland
52°24'N 99°43'W	Aspen	L	Island
52°24'N 100°01'W	Aspen	L	Island
52°26'N 99°44'W	Aspen	L	Island
52°27'N 99°48'W	Aspen	L	Island
52°31'N 99°58'W	Aspen	L	Island
52°33'N 99°41'W	Aspen	L	Island
52°39'N 100°21'W	Aspen	L	Mainland
52°44'N 99°59'W	Aspen	L	Island
52°44'N 100°51'W	Spruce	D	Mainland
52°48'N 100°53'W	Aspen	D	Mainland
52°50'N 100°13'W	Aspen	L	Mainland
52°51'N 100°50'W	Elm	L	Island
52°53'N 100°18'W	Aspen	L	Island
52°54'N 100°16'W	Aspen	L	Mainland
53°02'N 100°39'W	Spruce	L	Island
53°03'N 100°25'W	Elm	L	Island
53°08'N 99°10'W	Aspen	L	Mainland
53°09'N 98°26'W	Aspen	L	Mainland
53°12'N 99°13'W	Aspen	D	Mainland
53°19'N 99°12'W	Aspen	L	Mainland
53°25'N 99°10'W	Aspen	D	Mainland
53°28'N 99°06'W	Aspen	D	Mainland
53°31'N 99°04'W	Spruce	L	Mainland
53°51'N 98°23'W	Aspen	L	Mainland
53°52'N 98°45'W	Aspen	L	Mainland
55°58'N 99°21'W	Aspen	L	Mainland
54°20'N 101°29'W	Aspen	D	Mainland
54°23'N 101°48'W	Aspen	D	Mainland
54°25'N 101°15'W	Aspen	L	Mainland
54°28'N 101°16'W	Birch	D	Island
54°31'N 101°38'W	Spruce	L	Island
54°37'N 100°10'W	Spruce	L	Island
54°38'N 100°16'W	Aspen	L	Mainland
54°39'N 100°12'W	Aspen	L	Mainland
54°39'N 100°33'W	Spruce	L	Island
54°40'N 100°28'W	Spruce	D	Island
54°41'N 100°06'W	Aspen	L	Mainland

Appendix II. Continued

Location	Nest Tree	Live or Dead	Island or Mainland
54°41'N 100°16'W	Spruce	L	Island
54°42'N 100°29'W	Spruce	L	Island
54°43'N 100°49'W	Aspen	L	Mainland
54°47'N 100°47'W	Aspen	L	Mainland
54°48'N 100°45'W	Aspen	L	Mainland
54°49'N 101°23'W	Jack Pine	L	Mainland
54°51'N 101°29'W	Aspen	D	Mainland
55°01'N 101°35'W	Aspen	L	Mainland
55°03'N 101°28'W	Aspen	L	Mainland
55°11'N 101°33'W	Spruce	L	Island
55°13'N 101°34'W	Spruce	L	Island
55°15'N 101°42'W	Aspen	L	Island
55°16'N 101°28'W	Spruce	L	Island
55°19'N 101°22'W	Aspen	L	Island
55°24'N 101°48'W	Aspen	D	Mainland
55°26'N 101°47'W	Aspen	D	Mainland
55°26'N 101°49'W	Aspen	D	Mainland
55°28'N 101°48'W	Spruce	L	Island
55°30'N 101°26'W	Spruce	L	Island
55°34'N 101°46'W	Spruce	D	Mainland
55°42'N 101°36'W	Aspen	L	Island
55°46'N 101°41'W	Spruce	L	Island
55°48'N 101°42'W	Spruce	L	Island
1985			
54°02'N 100°15'W	Aspen	L	Mainland
54°04'N 100°10'W	Aspen	L	Mainland
54°04'N 100°09'W	Aspen	D	Mainland
54°04'N 100°09'W	Aspen	L	Mainland
54°08'N 100°01'W	Aspen	D	Island
54°10'N 100°20'W	Spruce	L	Island
54°11'N 100°23'W	Spruce	L	Mainland
54°11'N 100°03'W	Aspen	L	Island
54°11'N 100°02'W	Aspen	D	Island
54°20'N 100°11'W	Spruce	L	Mainland
54°28'N 100°23'W	Aspen	L	Island
54°32'N 100°12'W	Aspen	L	Mainland
54°34'N 100°13'W	Aspen	D	Mainland
54°28'N 100°31'W	Aspen	L	Mainland
54°10'N 100°40'W	Aspen	L	Mainland
54°20'N 101°01'W	Aspen	L	Mainland
54°33'N 101°07'W	Aspen	L	Mainland
54°36'N 100°31'W	Aspen	L	Mainland
54°42'N 100°37'W	Aspen	D	Mainland
54°41'N 100°55'W	Aspen	D	Mainland
54°36'N 100°31'W	Aspen	L	Mainland
54°36'N 100°30'W	Aspen	L	Mainland
54°42'N 100°08'W	Spruce	L	Island

Appendix II. Continued

Location	Nest Tree	Live or Dead	Island or Mainland
54°41'N 100°16'W	Aspen	L	Mainland
54°41'N 100°22'W	Aspen	L	Island
54°37'N 100°48'W	Spruce	L	Island
54°47'N 100°15'W	Aspen	L	Mainland
54°49'N 100°15'W	Aspen	L	Mainland
54°48'N 100°18'W	Aspen	L	Mainland
54°54'N 100°25'W	Aspen	L	Island
54°55'N 100°22'W	Aspen	L	Mainland
54°58'N 100°41'W	Aspen	L	Mainland
54°57'N 100°40'W	Spruce	D	Mainland
54°54'N 100°30'W	Aspen	D	Island
54°53'N 100°30'W	Aspen	L	Mainland
54°50'N 100°53'W	Spruce	L	Mainland
54°58'N 101°08'W	Aspen	L	Mainland
54°58'N 101°22'W	Aspen	L	Mainland
54°45'N 100°32'W	Spruce	L	Mainland
53°49'N 100°03'W	Aspen	L	Mainland
53°56'N 100°15'W	Spruce	D	Mainland
53°57'N 100°10'W	Aspen	L	Island
53°59'N 100°07'W	Aspen	L	Mainland
55°05'N 100°01'W	Spruce	D	Island
55°12'N 100°03'W	Spruce	L	Mainland
55°18'N 100°04'W	Aspen	L	Mainland
55°22'N 100°14'W	Aspen	L	Island
55°22'N 100°16'W	Aspen	L	Island
55°23'N 100°10'W	Spruce	L	Island
55°23'N 100°11'W	Spruce	L	Island
55°24'N 100°14'W	Spruce	L	Island
55°24'N 100°15'W	Spruce	L	Island
55°49'N 100°19'W	Aspen	L	Island
55°50'N 100°14'W	Aspen	L	Island
55°31'N 100°35'W	Spruce	L	Island
55°28'N 100°30'W	Spruce	L	Island
55°25'N 100°34'W	Aspen	L	Mainland
55°21'N 100°31'W	Aspen	L	Mainland
55°05'N 100°41'W	Aspen	L	Mainland
55°12'N 100°41'W	Aspen	L	Mainland
55°28'N 100°37'W	Aspen	L	Island
55°28'N 100°38'W	Aspen	L	Island
55°32'N 100°44'W	Aspen	L	Island
55°40'N 100°54'W	Spruce	L	Mainland
55°42'N 101°06'W	Spruce	L	Island
55°43'N 101°15'W	Spruce	D	Island
55°05'N 101°29'W	Aspen	D	Mainland
55°47'N 101°35'W	Aspen	L	Mainland
55°25'N 101°53'W	Spruce	L	Island
54°01'N 99°39'W	Spruce	L	Mainland
54°04'N 99°54'W	Spruce	L	Mainland
54°05'N 99°48'W	Spruce	L	Island

Appendix II. Continued

Location	Nest Tree	Live or Dead	Island or Mainland
54°07'N 99°49'W	Spruce	L	Island
54°06'N 99°53'W	Spruce	L	Mainland
54°10'N 99°56'W	Spruce	L	Island
54°10'N 99°48'W	Spruce	L	Mainland
54°12'N 99°51'W	Spruce	L	Island
54°13'N 99°52'W	Spruce	D	Mainland
54°27'N 99°40'W	Spruce	D	Mainland
54°30'N 99°35'W	Spruce	L	Mainland
54°40'N 99°52'W	Aspen	L	Mainland
54°42'N 99°58'W	Aspen	L	Mainland
54°43'N 99°53'W	Spruce	L	Mainland
54°44'N 99°47'W	Aspen	L	Mainland
54°45'N 99°54'W	Aspen	L	Island
54°55'N 99°52'W	Aspen	L	Mainland
54°56'N 99°50'W	Aspen	L	Mainland
54°56'N 99°58'W	Aspen	L	Mainland
55°02'N 99°31'W	Spruce	L	Mainland
55°01'N 98°38'W	Spruce	L	Island
55°01'N 98°37'W	Spruce	L	Island
55°07'N 98°41'W	Aspen	L	Island
55°11'N 98°33'W	Birch	L	Island
53°50'N 99°58'W	Spruce	L	Island
53°50'N 99°52'W	Aspen	D	Mainland
54°00'N 99°38'W	Aspen	L	Island
53°49'N 99°59'W	Aspen	D	Island
53°48'N 99°55'W	Aspen	L	Island
53°49'N 99°44'W	Aspen	L	Island
53°46'N 99°57'W	Aspen	L	Mainland
53°45'N 99°55'W	Spruce	L	Mainland
53°44'N 99°56'W	Spruce	L	Mainland
55°04'N 97°41'W	Aspen	D	Island
55°11'N 97°17'W	Aspen	L	Mainland
55°12'N 97°18'W	Aspen	L	Island
55°10'N 97°30'W	Spruce	L	Island
55°07'N 97°39'W	Aspen	L	Island
55°06'N 97°38'W	Spruce	L	Island
55°08'N 97°39'W	Aspen	L	Mainland
55°15'N 97°17'W	Aspen	D	Island
55°17'N 97°20'W	Spruce	L	Island
55°17'N 97°23'W	Spruce	L	Island
55°20'N 97°46'W	Spruce	L	Island
55°20'N 97°57'W	Spruce	L	Island
55°24'N 97°42'W	Spruce	L	Mainland
55°30'N 97°33'W	Spruce	L	Island
55°35'N 97°27'W	Spruce	L	Island
55°41'N 97°26'W	Aspen	L	Mainland
55°43'N 97°27'W	Aspen	L	Island
55°50'N 97°38'W	Spruce	L	Mainland
55°16'N 97°14'W	Spruce	L	Island
55°16'N 97°14'W	Spruce	L	Island

Appendix II. Continued

Location	Nest Tree	Live or Dead	Island or Mainland
55°44'N 97°07'W	Spruce	L	Island
55°47'N 97°11'W	Aspen	L	Mainland
55°19'N 97°02'W	Aspen	L	Island
55°33'N 97°04'W	Spruce	L	Island
55°43'N 97°04'W	Spruce	L	Island
55°44'N 96°56'W	Spruce	L	Island
55°42'N 96°55'W	Spruce	L	Island
55°44'N 96°53'W	Spruce	L	Island
55°44'N 96°52'W	Aspen	L	Island
55°28'N 96°51'W	Spruce	L	Mainland
55°25'N 96°46'W	Aspen	D	Mainland
55°27'N 96°40'W	Spruce	L	Mainland
55°22'N 96°37'W	Aspen	L	Mainland
55°21'N 96°39'W	Spruce	L	Mainland
55°33'N 96°20'W	Aspen	L	Island
55°29'N 96°35'W	Spruce	L	Mainland
	1986 surveys		
55°07'N 96°10'W	Aspen	L	Island
55°03'N 96°42'W	Spruce	L	Mainland
55°16'N 96°56'W	Spruce	L	Mainland
54°23'N 94°23'W	Spruce	L	Island
54°24'N 94°16'W	Aspen	L	Island(lone tree)
54°36'N 94°14'W	Spruce	L	Island
54°36'N 94°17'W	Spruce	L	Island
54°35'N 94°19'W	Spruce	L	Island
54°38'N 94°32'W	Spruce	L	Island
54°46'N 94°26'W	Spruce	L	Island
54°15'N 94°38'W	Spruce	L	Island
54°15'N 94°34'W	Spruce	L	Island
54°22'N 94°35'W	Spruce	L	Island
54°28'N 94°44'W	Aspen	D	Island
54°30'N 94°37'W	Birch	L	Island
54°18'W 94°49'W	Spruce	L	Island
54°28'N 94°51'W	Spruce	L	Island
54°32'N 94°47'W	Spruce	L	Island
54°51'N 94°58'W	Spruce	L	Island
54°13'N 95°03'W	Aspen	D	Island
54°16'N 95°01'W	Spruce	L	Island
54°27'N 95°04'W	Spruce	D	Island
54°38'N 95°07'W	Spruce	L	Island
54°32'N 95°29'W	Spruce	L	Island
54°33'N 95°46'W	Spruce	L	Mainland
54°33'N 95°27'W	Spruce	L	Island
54°17'N 95°47'W	Spruce	L	Island
54°38'N 95°19'W	Spruce	L	Island
54°35'N 95°40'W	Aspen	L	Island
54°34'N 95°54'W	Spruce	L	Island
54°36'N 95°58'W	Spruce	L	Mainland
54°42'N 95°26'W	Spruce	L	Island
54°41'N 95°29'W	Spruce	L	Island

Appendix II. Continued

Location	Nest Tree	Live or Dead	Island or Mainland
54°41'N 95°29'W	Spruce	L	Island
54°43'N 95°28'W	Aspen	L	Island
54°44'N 95°24'W	Spruce	L	Mainland
54°47'N 95°53'W	Spruce	L	Island
53°58'N 96°05'W	Spruce	L	Mainland
53°57'N 96°08'W	Spruce	L	Island
53°44'N 96°07'W	Spruce	L	Island
53°34'N 96°10'W	Birch	D	Island
53°31'N 96°13'W	Aspen	D	Island
53°28'N 96°03'W	Aspen	L	Mainland
54°43'N 96°53'W	Spruce	L	Island
54°42'N 96°49'W	Spruce	L	Island
54°43'N 96°58'W	Spruce	L	Island
54°41'N 97°00'W	Spruce	L	Island
54°39'N 97°01'W	Spruce	D	Island
54°28'N 96°56'W	Spruce	L	Island
54°32'N 96°33'W	Spruce	L	Island
54°31'N 96°32'W	Spruce	L	Mainland
54°34'N 96°29'W	Aspen	D	Island
54°27'N 96°12'W	Aspen	L	Island
54°13'N 96°02'W	Spruce	L	Island
54°11'N 96°12'W	Aspen	L	Island
54°07'N 96°27'W	Spruce	L	Island
54°10'N 96°41'W	Spruce	L	Island
54°17'N 96°45'W	Spruce	L	Island
54°10'W 96°49'W	Spruce	L	Island
54°10'N 96°54'W	Spruce	L	Island
54°11'N 97°01'W	Aspen	L	Island
54°13'N 97°03'W	Aspen	L	Island
55°09'N 94°27'W	Spruce	L	Island
55°02'N 94°31'W	Spruce	L	Island
55°07'N 95°11'W	Aspen	L	Island
55°21'N 95°34'W	Spruce	L	Island
55°09'N 95°41'W	Spruce	L	Island
55°07'N 95°58'W	Spruce	L	Island
54°50'N 92°30'W	Spruce	L	Mainland
54°38'N 92°36'W	Spruce	L	Island
54°19'N 93°01'W	Spruce	L	Island
54°44'N 93°19'W	Spruce	L	Island
54°27'N 93°29'W	Spruce	L	Island
54°24'N 93°44'W	Aspen	D	Island
54°25'N 93°55'W	Spruce	L	Island
53°51'N 94°21'W	Spruce	L	Mainland
53°56'N 94°37'W	Birch	D	Island
53°55'N 95°13'W	Aspen	L	Mainland
53°42'N 95°27'W	Spruce	L	Island
53°55'N 95°38'W	Spruce	L	Island
53°39'N 95°46'W	Spruce	L	Island
53°41'N 95°43'W	Spruce	L	Island
53°54'N 95°54'W	Spruce	D	Island
55°21'N 93°57'W	Spruce	L	Island
55°16'N 93°27'W	Aspen	L	Mainland
55°05'N 93°19'W	Aspen	L	Island
55°07'N 93°08'W	Spruce	L	Island
55°05'N 92°55'W	Spruce	L	Island

Appendix II. Continued

Location	Nest Tree	Live or Dead	Island or Mainland
55°07'N 92°41'W	Spruce	L	Mainland
55°20'N 93°57'W	Spruce	L	Island
55°05'N 93°06'W	Spruce	L	Island
55°05'N 93°01'W	Spruce	L	Island(2 nests)
55°05'N 92°58'W	Spruce	L	Island
53°56'N 96°12'W	Aspen	L	Island
53°56'N 96°12'W	Aspen	D	Island
53°45'N 96°05'W	Aspen	D	Island
55°07'N 96°11'W	Spruce	L	Island
55°23'N 96°18'W	Spruce	L	Island
55°24'N 96°26'W	Spruce	L	Island
54°14'N 94°21'W	Spruce	L	Island
54°23'N 94°23'W	Spruce	D	Island
54°35'N 94°11'W	Spruce	L	Island
54°40'N 94°23'W	Aspen	L	Island
54°22'N 94°46'W	Spruce	L	Island
54°23'N 94°58'W	Spruce	L	Island
54°31'N 94°48'W	Aspen	L	Island
54°51'N 94°54'W	Aspen	L	Island
54°14'N 95°45'W	Spruce	L	Island
54°42'N 95°22'W	Spruce	L	Island
54°40'N 95°48'W	Aspen	L	Island
54°50'N 95°26'W	Spruce	L	Island
54°49'N 95°47'W	Aspen	D	Island
54°40'N 97°01'W	Spruce	L	Island
54°30'N 96°17'W	Aspen	L	Island
54°28'N 96°28'W	Aspen	L	Island
54°12'N 96°05'W	Spruce	L	Island
54°10'N 96°38'W	Spruce	D	Island
54°09'N 96°39'W	Spruce	L	Island
54°14'N 97°07'W	Spruce	L	Island
54°15'N 97°07'W	Jack Pine	L	Island
53°46'N 94°40'W	Aspen	D	Island
53°42'N 94°39'W	Spruce	L	Island
54°44'N 92°30'W	Spruce	L	Mainland
54°48'N 92°30'W	Spruce	D	Island
54°48'N 92°30'W	Spruce	D	Mainland
54°36'N 92°41'W	Spruce	L	Mainland
54°51'W 93°05'W	Spruce	L	Mainland
54°49'N 93°06'W	Spruce	L	Island
54°31'N 93°25'W	Spruce	L	Island
54°07'N 93°18'W	Aspen	L	Mainland
54°23'N 93°42'W	Spruce	L	Mainland
55°03'N 94°11'W	Spruce	L	Island
55°01'N 94°15'W	Spruce	L	Island
55°08'N 94°30'W	Spruce	L	Island
55°08'N 95°36'W	Spruce	L	Island
53°37'N 92°37'W	Spruce	L	Mainland
54°41'N 93°21'W	Spruce	L	Island
54°20'N 93°56'W	Spruce	L	Mainland
53°33'N 96°05'W	Spruce	L	Island
54°48'N 96°54'W	Spruce	L	Mainland
54°49'N 94°55'W	Spruce	L	Mainland

Appendix II. Continued

Location	Nest Tree	Live or Dead	Island or Mainland
55°18'N 93°15'W	Spruce	L	Mainland
55°08'N 92°40'W	Spruce	L	Mainland
55°12'N 92°30'W	Spruce	L	Mainland
55°10'N 92°30'W	Spruce	D	Mainland
55°02'N 92°29'W	Spruce	L	Mainland
55°52'N 92°09'W	Aspen	L	Island
53°43'N 94°08'W	Spruce	D	Mainland
54°30'N 94°17'W	Spruce	L	Mainland
	1987 surveys		
59°48'N 100°48'W	Spruce	L	Mainland
59°03'N 101°46'W	Spruce	L	Mainland
59°24'N 101°32'W	Spruce	L	Mainland
58°58'N 99°58'W	Spruce	L	Mainland
58°04'N 101°23'W	Spruce	L	Mainland
58°05'N 101°11'W	Aspen	L	Mainland
58°07'N 101°14'W	Aspen	L	Mainland
58°10'N 101°20'W	Spruce	L	Island
58°10'N 101°45'W	Aspen	L	Island
58°09'N 101°19'W	Jack Pine	L	Mainland
58°22'N 101°52'W	Spruce	L	Island
58°55'N 101°43'W	Spruce	L	Mainland
57°03'N 100°46'W	Aspen	L	Island
57°04'N 101°13'W	Jack Pine	L	Mainland
57°13'N 101°03'W	Birch	D	Island
57°15'N 101°54'W	Spruce	L	Island
57°17'N 101°04'W	Spruce	L	Island
57°17'N 100°17'W	Aspen	L	Mainland
57°25'N 100°06'W	Aspen	L	Mainland
57°26'N 100°56'W	Aspen	L	Mainland
57°26'N 101°24'W	Spruce	L	Island
57°27'N 101°24'W	Spruce	L	Island
57°34'N 101°19'W	Aspen	L	Island
57°33'N 100°54'W	Birch	L	Island
57°34'N 100°46'W	Aspen	L	Mainland
57°40'N 101°14'N	Spruce	L	Island
57°41'N 101°42'W	Spruce-dead top of live Spruce		Island
57°42'N 101°12'W	Aspen	D	Island
57°42'N 100°42'N	Aspen	D	Mainland
57°43'N 100°41'W	Spruce	D	Mainland
57°53'N 100°17'W	Spruce	L	Island
57°56'N 101°21'W	Jack Pine	L	Mainland
57°59'N 101°26'W	Jack Pine	L	Mainland
57°00'N 101°05'W	Spruce	L	Island
57°04'N 101°10'W	Spruce	L	Island
57°07'N 101°12'W	Spruce	L	Island
57°40'N 101°14'W	Spruce	L	Island
57°55'N 100°17'W	Aspen	L	Island
57°52'N 99°36'W	Aspen	L	Island
57°46'N 99°43'W	Birch	L	Island
56°38'N 99°46'W	Aspen	D	Island
56°41'N 99°37'N	Aspen	L	Island
56°49'N 99°26'W	Spruce	L	Island

Appendix II. Continued

Location	Nest Tree	Live or Dead	Island or Mainland
56°42'N 99°36'W	Spruce	L	Island
56°49'N 99°24'N	Spruce	L	Island
56°52'N 99°23'W	Spruce	L	Island
56°54'N 99°31'W	Spruce	L	Island
56°54'N 99°42'W	Aspen	L	Island
56°07'N 101°32'W	Spruce	L	Island
56°21'N 100°24'W	Spruce	L	Island
56°25'N 100°20'W	Spruce	L	Island
56°27'N 100°45'W	Spruce	L	Island
56°28'N 100°06'W	Aspen	L	Mainland
56°33'N 100°43'W	Spruce	L	Island
56°35'N 100°16'W	Aspen	L	Island
56°42'N 100°12'W	Aspen	L	Island
56°45'N 100°47'W	Aspen	D	Mainland
56°46'N 100°19'W	Spruce	L	Island
56°47'N 101°58'W	Aspen	L	Island
56°47'N 100°48'W	Birch-dead top live Birch		Mainland
56°52'N 100°18'W	Aspen	L	Mainland
56°54'N 100°19'W	Aspen	L	Island
56°55'N 101°17'W	Jack Pine	L	Mainland
56°55'N 101°47'W	Spruce	L	Island
56°56'N 101°13'W	Aspen	L	Island
56°56'N 100°21'W	Aspen	L	Island
56°58'N 101°07'W	Birch	L	Island
56°05'N 101°47'W	Aspen	D	Island
56°13'N 101°03'W	Aspen	L	Island
56°13'N 100°44'W	Spruce	L	Island
56°19'N 100°33'W	Spruce	L	Island
56°24'N 100°18'W	Spruce	L	Mainland
56°45'N 100°47'W	Birch	D	Island
56°48'N 100°30'W	Spruce	L	Mainland
56°58'N 100°33'W	Spruce	L	Mainland
56°59'N 100°45'W	Jack Pine	D	Mainland
56°59'N 100°44'W	Spruce	D	Mainland
56°27'N 100°25'W	Spruce	L	Mainland

Appendix III. MANITOBA'S BALD EAGLE NEST ESTIMATES BY 1:250,000 MAP SHEET.

Place	Map Sheet	Nest Estimate
Virden	62F	0
Brandon	62G	0
Winnipeg	62H	0
Kenora	52E	15
Pointe Du Bois	52L	20
Selkirk	62I	10
Neepawa	62J	10
Riding Mountain	62K	10
Duck Mountain	62N	10
Dauphin Lake	62O	40
Hecla	62P	40
Carroll Lake	52M	20
Deer Lake	53D	20
Barens River	63A	25
Waterhen	63B	30
Swan Lake	63C	35
The Pas	63F	25
Grand Rapids	63G	40
Norway House	63H	25
Island Lake	53E	25
Opasquia Lake	53F	5
Stull Lake	53K	15
Oxford House	53L	60
Cross Lake	63I	60
Wekusko Lake	63J	50
Cormorant Lake	63K	60
Kississing	63N	60
Nelson House	63O	50
Sipiwesk	63P	60
Knee Lake	53M	50
Gods River	53N	15
Sturgeon Lake	53O	0
Kaskattama	54B	0
Black Duck River	54A	0
Hayes River	54C	0
Kettle Rapids	54D	35
Split Lake	64A	50
Uhlman Lake	64B	60
Granville Lake	64C	60
Brochet	64F	60
Big Sand Lake	64G	60
North Indian Lake	64H	35
Herchmer	54E	5
York Factory	54F	0
Cape Churchill	54K	0
Churchill	54L	0
Shethanei Lake	64I	10
Tadoule Lake	64J	40
Whisky Jack Lake	64K	50
Kasmere Lake	64N	30
Munroe Lake	64O	5
Nejanilini Lake	64P	0
Caribou River	54M	0
	Total	1385